

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application of:	Anton BERNS; Els ROBANUS MAANDAG; Hein TE RIELE	Confirmation No.:	To Be Assigned
Serial No.:	To Be Assigned [Continuation of Application No. 09/253,818]	Art Unit:	To Be Assigned
Filed:	November 24, 2003	Examiner:	To Be Assigned
For:	GENE TARGETING IN ANIMAL CELLS USING ISOGENIC DNA CONSTRUCTS	Attorney Docket No.:	8535-068-999

INFORMATION DISCLOSURE STATEMENT

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

In accordance with the duty of disclosure provisions of 37 C.F.R. §1.56, it is hereby provided certain information which the Examiner may consider material to the examination of the subject U.S. patent application. It is requested that the Examiner make this information of record if it is deemed material to the examination of the application.

This application is a continuation application under 37 C.F.R. §1.60 or §1.53(b) or (d).

Enclosures accompanying this Information Disclosure Statement is a list of all patents, publications, applications, or other information submitted for consideration by the office.

Copies of publications listed on Form PTO-1449 from prior application Serial No.09/253,818, filed on February 19, 1999, of which this application claims priority under 35 U.S.C. §120, are not being submitted pursuant to 37 C.F.R. §1.98(d).

This Information Disclosure Statement is filed under 37 C.F.R. §1.97(b) before the mailing of the first Office action on the merits.

The Commissioner is authorized to charge any additional fee required or credit any overpayment for this Information Disclosure Statement and/or Petition to Pennie & Edmonds LLP Deposit Account No. 16-1150.

No admission is made that the information cited in this Statement is, or is considered to be, material to patentability nor a representation that a search has been made (other than a search report of a foreign counterpart application or PCT International Search Report if submitted herewith). 37 C.F.R. §§1.97(g) and (h).

Respectfully submitted,

Date: November 24, 2003

Laura A. Coruzzi 30,742
Laura A. Coruzzi (Reg. No.)

By: *T. Christopher Tsang* 40,258
T. Christopher Tsang (Reg. No.)
PENNIE & EDMONDS LLP
1155 Avenue of the Americas
New York, New York 10036-2711
(212) 790-9090

Enclosures

LIST OF REFERENCES CITED BY APPLICANT (Use several sheets if necessary)	ATTY DOCKET NO.	APPLICATION NO.
	8535-068-999	To Be Assigned
	APPLICANT	Berns et al.
	FILING DATE November 24, 2003	GROUP To Be Assigned

U.S. PATENT DOCUMENTS

*EXAMINER INITIAL		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	A01	5,789,215	8/4/98	Berns et al.			
	A02	5,631,153	5/20/97	Capecchi et al.			
	A03	5,627,059	5/6/97	Capecchi et al.			
	A04	5,612,205	3/18/97	Kay et al.			
	A05	5,487,992	1/30/96	Capecchi et al.			
	A06	5,464,764	11/7/95	Capecchi et al.			
	A07	5,346,818	9/13/94	Schafer et al.			
	A08	5,175,384	12/29/92	Krimpenfort et al.			
	A09	4,997,757	3/5/91	Schiestl			
	A10	4,950,599	8/21/90	Bertling			
	A11	4,859,587	8/22/89	Roizman			

FOREIGN PATENT DOCUMENTS

		DOCUMENT NUMBER	DATE	COUNTRY	CLASS	SUBCLASS	TRANSLATION	YES	NO
	B01	EP 241 044	10/14/87	Europe					
	B02	EP 265 556	5/4/88	Europe					
	B03	EP 308 220	3/22/89	Europe					
	B04	EP 315 062	5/10/89	Europe					
	B05	EP 317 509	5/24/89	Europe			Abstract only		
	B06	EP 357 127	3/7/90	Europe					
	B07	EP 374 913	6/27/90	Europe					
	B08	EP 386 766	9/12/90	Europe			Abstract only		
	B09	EP 397 560	11/14/90	Europe					
	B10	EP 408 301	1/16/91	Europe					
	B11	EP 410 748	1/30/91	Europe					
	B12	EP 414 297	2/27/91	Europe					
	B13	WO 83/01176	4/14/83	PCT					
	B14	WO 87/02702	5/7/87	PCT					
	B15	WO 88/06182	8/25/88	PCT			Abstract only		
	B16	WO 90/07576	7/12/90	PCT					
	B17	WO 89/12684	12/28/89	PCT					
	B18	WO 90/00616	1/25/90	PCT					
	B19	WO 90/07576	7/12/90	PCT			Abstract only		
	B20	WO 90/09443	8/23/90	PCT					
	B21	WO 90/11354	4/10/90	PCT			Abstract only		

	B22	WO 90/12880	11/1/90	PCT				
	B23	WO 91/01087	2/7/91	PCT				
	B24	WO 91/01140	2/7/91	PCT				
	B25	WO 91/02070	2/21/91	PCT				
	B26	WO 91/02797	3/7/91	PCT				Abstract only
	B27	WO 91/06667	5/16/91	PCT				
	B28	WO 93/04169	3/4/1993	PCT				
	B29	DD 284898	11/28/90	Germany				Abstract only
	B30	JP 63068074	3/26/88	Japan				Abstract only
	B31	JP 63267279	11/4/88	Japan				Abstract only
	B32	JP 3035784	2/15/91	Japan				Abstract only
	B33	FR 2615527	11/25/88	France				Abstract only
	B34	AU 51199/90	3/8/90	Australia				

OTHER REFERENCES (Including Author, Title, Date, Pertinent Pages, Etc.)

	C01	Adair et al., "Targeted homologous recombinations at the endogenous adenine phosphoribosyltransferase locus in chinese hamster cells," <i>PNAS</i> , 86:4574-4578 (1989).
	C02	Bain et al., "E2A Proteins Are Required for Proper B Cell Development and Initiation of Immunoglobulin Gene Rearrangements," <i>Cell</i> , 79:885-892 (1994).
	C03	Baker et al., "Homologous Recombination between Transferred and Chromosomal Immunoglobulin κ Genes," <i>Molecular and Cellular Biology</i> , 8(10):4041-4047 (1988).
	C04	Bollag et al., "Homologous recombination in mammalian cells," <i>Annual Review of Genetics</i> , 23:199-225 (1989).
	C05	Camerini-Otero et al., "Right on Target," <i>The New Biologist</i> , 2(4):337-341 (1990).
	C06	Cepecchi, M.R., "The New Mouse Genetics: Altering the Genome by Gene Targeting," <i>Trends in Genetics</i> , 5(3):70-76 (1989).
	C07	Capecci, M.R., "Altering the Genome by Homologous Recombination," <i>Science</i> , 244:1288-1292 (1989).
	C08	Charron et al., "High-Frequency Disruption of the N-myc Gene in Embryonic Stem and Pre-B Cell Lines by Homologous Recombination," <i>Molecular Cell Biology</i> , 10(4):1799-1804 (1990).
	C09	Chen et al., "B cell development in mice that lack one or both immunoglobulin χ light chain genes," <i>EMBO Journal</i> , 12(3):821-830 (1993).
	C10	Chisaka et al., Developmental defects of the ear, cranial nerves and hindbrain resulting from targeted disruption of the mouse homeobox gene HOX-1.6," <i>Nature</i> , 355:516-520 (1992).
	C11	Cruz et al., "Gene replacement in parasitic protozoa," <i>Nature</i> , 348:171-173 (1990).
	C12	Deng et al., "Reexamination of Gene Targeting Frequency as a Function of the Extent of Homology between the Targeting Vector and the Target Locus," <i>Molecular and Cellular Biology</i> , 12(8):3365-3371 (1992).
	C13	Deng et al., "Location of Crossovers during Gene Targeting with Insertion and Replacement Vectors," <i>Molecular and Cellular Biology</i> , 13(4):2134-2140 (1993).
	C14	Doetschman et al., "Targetted correction of a mutant HPRT gene in mouse embryonic stem cells," <i>Nature</i> , 330:576-578 (1987).
	C15	Doetschman et al., "Targeted mutation of the Hprt gene in mouse embryonic stem cells," <i>PNAS</i> , 85:8583 (1988).
	C16	Fell et al., "Homologous recombination in hybridoma cells: Heavy chain chimeric antibody produced by gene targeting," <i>PNAS</i> , 86:8507-8511 (1989).
	C17	Fenton et al., "Isotypic Exclusion of γδ T Cell Receptors in Transgenic Mice Bearing a Rearranged β-Chain Gene," <i>Science</i> , 241:1089-1092 (1988).
	C18	Fink et al., "Gene conversion in the absence of reciprocal recombination," <i>Nature</i> , 310:728-729 (1984).
	C19	Gridley, T., "Insertional Versus Targeted Mutagenesis in Mice," <i>The New Biologist</i> , 3(11):1025-1034 (1991).
	C20	Hasty et al., "Target Frequency and Integration Pattern for Insertion and Replacement Vectors in Embryonic Stem Cells," <i>Molecular and Cellular Biology</i> , 11(9):4509-4517 (1991).
	C21	Hasty et al., "The Length of Homology Required for Gene Targeting in Embryonic Stem Cells," <i>Molecular and Cellular Biology</i> , 11(11):5586-5591 (1991).
	C22	Hasty et al., "The Role and Fate of DNA Ends for Homologous Recombination in Embryonic Stem Cells," <i>Molecular and Cellular Biology</i> , 12(6):2464-2474 (1992).
	C23	Hooper et al., "HPRT-deficient (Lesch-Nyhan) mouse embryos derived from germline colonization by cultured cells," <i>Nature</i> , 326:292-295 (1987).
	C24	Itzhaki et al., "Targeted disruption of a human interferon-inducible gene detected by secretion of human growth hormone," <i>Nucleic Acids Research</i> , 19(14):3835-3842 (1991).

	C25	Itzhaki et al., "Targeted breakage of a human chromosome mediated by cloned human telomeric DNA," <i>Nature Genetics</i> , 2:283-287 (1992).
	C26	Jasin et al., "Gene targeting at the human CD4 locus by epitope addition," <i>Genes & Development</i> , 4:157-166 (1990).
	C27	Jasin et al., "Homologous integration in mammalian cells without target gene selection," <i>Genes & Development</i> , 2:1353-1363 (1988).
	C28	Joyner et al., "Production of a mutation in mouse <i>En-2</i> gene by homologous recombination in embryonic stem cells," <i>Nature</i> , 338:153-156 (1989).
	C29	Kim et al., "Inactivation of the human β -globin gene by targeted insertion into the β -globin locus control region," <i>Genes & Development</i> , 6:928-938 (1992).
	C30	Klein, H.L., "Lack of association between intrachromosomal gene conversion and reciprocal exchange," <i>Nature</i> , 310:748-753 (1984).
	C31	Koller et al., "Germ-line transmission of a planned alteration made in a hypoxanthine phosphoribosyltransferase gene by homologous recombination in embryonic stem cells," <i>PNAS</i> , 86:8927-8931 (1989).
	C32	Koller et al., "Toward an animal model of cystic fibrosis: Targeted interruption of exon 10 of the cystic fibrosis transmembrane regulator gene in embryonic stem cells," <i>PNAS</i> , 88:107030-10734 (1991).
	C33	Koller et al., "Inactivating the β -microglobulin locus in mouse embryonic stem cells by homologous recombination," <i>PNAS</i> , 86:8932-8935 (1989).
	C34	Letsou et al., "Effect of the Molecular Nature of Mutation on the Efficiency of Intrachromosomal Gene Conversion in Mouse Cells," <i>Genetics</i> , 117:759-769 (1987).
	C35	Lin et al., "recombination in mouse L cells between DNA introduced into cells and homologous chromosomal sequences," <i>PNAS</i> , 82:1391-1395 (1985).
	C36	Lindblad-Toh, K. et al., <i>Nature Genetics</i> , 24:381-386 (2000).
	C37	Lowy et al., "Isolation of Transforming DNA: Cloning the Hamster aprt Gene," <i>Cell</i> , 22:817-823 (1980).
	C38	Lyon, M.F. et al. (eds.), <i>Genetic Variants and Strains of the Laboratory Mouse</i> , Vol. Two, Third Edition, Chapter 14 (pp. 1532-1536) entitled " <i>Rules for Nomenclature of Inbred Strains</i> ."
	C39	Lyon, M.F. et al. (eds.), <i>Genetic Variants and Strains of the Laboratory Mouse</i> , Vol. Two, Third Edition, Chapter 16 (pp. 1577-1596) entitled " <i>The Laboratory Mouse and Its Wild Relatives</i> ."
	C40	Mansour et al., "Disruption of the proto-oncogene <i>int-2</i> in mouse embryo-derived stem cells: a general strategy for targeting mutations to non-selectable genes," <i>Nature</i> , 336:348-352 (1988).
	C41	Miller et al., "Targeted integration of the <i>Ren-1D</i> locus in mouse embryonic stem cells," <i>PNAS</i> , 89:5020-5024 (1992).
	C42	Nabel et al., "Perspectives on Human Gene Therapy," chapter 26, pages 315-319 from <i>Annual Reports in Medicinal Chemistry</i> , Vol. 26, 1991, Academic Press.
	C43	Nussenzweig et al., "Allelic Exclusion in Transgenic Mice That Express the Membrane Form of Immunoglobulin μ ," <i>Science</i> , 236:816-819 (1987).
	C44	Pascoe et al., "Genes and functions: trapping and targeting in embryonic stem cells," <i>Biochimica et Biophysica Acta</i> , 1114:209-221 (1992).
	C45	Reeck et al., "Homology in Proteins and Nucleic Acids: a Terminology Muddle and a Way out of it," <i>Cell</i> , 50:667 (1987).
	C46	Rubnitz et al., "The Minimum Amount of Homology Required for Homologous Recombination in Mammalian Cells," <i>Molecular and Cellular Biology</i> , 4(11):2253-2258 (1984).
	C47	Schinkel et al., "Disruption of the Mouse <i>mdrla</i> P-Glycoprotein Gene Leads to a Deficiency in the Blood-Brain Barrier and to Increased Sensitivity to Drugs," <i>Cell</i> , 77:491-502 (1994).
	C48	Schwartzberg et al., "Germ-Line transmission of a <i>c-abl</i> Mutation Produced by Targeted Gene disruption in ES Cells," <i>Science</i> , 246:799-803 (1989).
	C49	Sedivy et al., "Positive genetic selection for gene disruption in mammalian cells by homologous recombination," <i>PNAS</i> , 86:227-231 (1991).
	C50	Singer et al., "Determination of the Amount of Homology Required for Recombination in Bacteriophage T4," <i>Cell</i> , 31:25-33 (1982).
	C51	Shen et al., "Homologous Recombination in <i>Escherichia Coli</i> : Dependence on Substrate Length and Homology," <i>Genetics</i> , 112:441-457 (1986).
	C52	Shinkai et al., "Restoration of T Cell Development in RAG-2-Deficient Mice by Functional TCR Transgenes," <i>Science</i> , 259:822-825 (1993).
	C53	Simpson, E.M. et al., <i>Nature Genetics</i> , 16:19-27 (1997).
	C54	Smithies et al., "Insertion of DNA sequences into the human chromosomal β -globin locus by homologous recombination," <i>Nature</i> , 317:230-234 (1985).
	C55	Song et al., "Accurate Modification of a chromosomal plasmid by homologous recombination in human cells," <i>PNAS</i> , 84:6820-6824 (1987).
	C56	Soriano et al., "Targeted Disruption of the c-src Proto-Oncogene Leads to Osteopetrosis in Mice," <i>Cell</i> , 64:693-702 (1991).
	C57	te Riele et al., "Consecutive inactivation of both alleles of the <i>pim-1</i> proto-oncogene by homologous recombination in embryonic stem cells," <i>Nature</i> , 348:649-651 (1990).
	C58	ten Asbroek et al., "Targeted insertion of the neomycin phosphotransferase gene into the tubulin gene cluster of <i>Trypanosoma brucei</i> ," <i>Nature</i> , 348:174-175 (1990).
	C59	Thomas et al., "High Frequency Targeting of Genes to Specific Sites in the Mammalian Genome," <i>Cell</i> , 44:419-428

	(1986).
C60	Thomas et al., "Site-Directed Mutagenesis by Gene targeting in Mouse Embryo-Derived Stem Cells," <i>Cell</i> , 51:503-512 (1987).
C61	Threadgill, D.W. et al., <i>Mammalian Genome</i> , 8:390-393 (1997).
C62	Uematsu et al., "In Transgenic Mice the Introduced Functional T Cell Receptor β Gene Prevents Expression of Endogenous β Genes," <i>Cell</i> , 52:831-841 (1988).
C63	van der Lugt et al., "Posterior transformation, neurological abnormalities, and severe hematopoietic defects in mice with a targeted deletion of the <i>bmi-1</i> proto-oncogene," <i>Genes & Development</i> , 8:757-769 (1994).
C64	van der Lugt et al., "A <i>pgk::hprt</i> fusion as a selectable marker for targeting of genes in mouse embryonic stem cells: disruption of the T-cell receptor δ -chain-encoding gene," <i>Gene</i> , 105:263-267 (1991).
C65	van Deursen et al., "Targeting of the creatine kinase M gene in embryonic stem cells using isogenic and nonisogenic vectors," <i>Nucleic Acids Research</i> , 20(15):3815-3820 (1992).
C66	Waldman et al., "Dependence of Intrachromosomal Recombination in Mammalian Cells on Uninterrupted Homology," <i>Molecular and Cellular Biology</i> , 8(12):5350-5357 (1988).
C67	Waldman et al., "Differential effects of base-pair mismatch on intrachromosomal versus extrachromosomal recombination in mouse cells," <i>PNAS</i> , 84:5340-5344 (1987).
C68	Watt et al., "Homology requirements for recombination in <i>Escherichia coli</i> ," <i>PNAS</i> , 82:4768-4772 (1985).
C69	Yenofsky et al., "A mutant neomycin phosphotransferase II gene reduces the resistance of transformants to antibiotic selection pressure," <i>PNAS</i> , 87:3435-3439 (1990).
C70	Zheng et al., "Gene targeting in normal and amplified cell lines," <i>Nature</i> , 344:170-173 (1990).
C71	Zijlstra et al., "Germ-line transmission of a disrupted β_2 -microglobulin gene produced by homologous recombination in embryonic stem cells," <i>Nature</i> , 342:435-438 (1989).
C72	Zimmer et al., "Production of chimaeric mice containing embryonic stem (ES) cells carrying a homoeobox <i>Hox 1.1</i> allele mutated by homologous recombination," <i>Nature</i> , 338:150-153 (1989).

EXAMINER	DATE CONSIDERED
----------	-----------------

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.